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Photoreceptor Optics

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Contents: Photoreceptor Waveguide Optics. — Membrane and Dichroism. — Photopigment, Membrane and Dichroism. — Polarisation Sensitivity and Dichroism. — Photomechanical Responses of Photoreceptors. — Electrophysiology of Photoreceptors.

Photoreceptor optics deals with the factors that determine how the optical properties of photoreceptors—their arrangement, orientation, shape, size, refractive index, and membrane properties—influence their absorption of light. For this carefully edited book the editors invited authors of international standing to review the fundamental principles in certain fields, and to present recent research results and prospects.
The two editors have differing backgrounds: one is a biologist, whereas the other received his biological training after a formal education in the physical sciences. The complexity of the problems that face the visual scientist demands such a union. As this book clearly shows, visual scientists derive their knowledge and tools from such diverse disciplines as ultrastructure research, membrane biophysics, electromagnetic theory, and quantum mechanics. Photoreceptor Optics is a synthesis of these disciplines, with the goal of understanding the function of photoreceptors from their structural organization.

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